# EXECUTIVE SUMMARY OF ISSUES RELATING TO ENVIRONMENTAL TOBACCO SMOKE (ETS) AND INDOOR AIR QUALITY (IAQ)

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## I. INTRODUCTION

The following document provides a brief overview of many of the issues relating to ETS and IAQ.

## II. SUMMARY OVERVIEW REGARDING THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

OSHA [within the Department of Labor (DOL)] currently has statutory authority to regulate regarding indoor air quality in the workplace. Legislation pending in Congress in the form of the OSHA Reform Act and the Indoor Air Quality (IAQ) Act could, over time, add to OSHA's responsibilities.

OSHA has embarked upon a workplace rulemaking concerning indoor air quality. The first stage -- a Request for Information -- was completed March 20, 1992. If OSHA pursues formal rulemaking on indoor air, the process could take from three to five years from the present date. OSHA rulemaking could result in federal standards for indoor air quality in the workplace. An overall IAQ standard would not necessarily restrict smoking in the workplace.

Published reports indicate that OSHA staffer, Debra Janes, will complete an internal review of the RFI before October 16, 1992. Ms. Janes reportedly will prepare a report for the Acting Director at OSHA (Dorothy Strunk) outlining regulatory options OSHA might pursue on indoor air quality in the workplace. Some discussions have noted that the "Janes Report" may encourage some form of OSHA regulation, possibly including separate smoking area requirements.

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The American Lung Association has filed one petition, and Action on Smoking & Health (ASH) has filed several petitions, with OSHA seeking an entirely separate OSHA rulemaking on ETS in the workplace. Essentially, ASH and the American Lung Association want OSHA to issue a federal standard banning smoking in the workplace or limiting it to separately ventilated and exhausted smoking areas. OSHA has not ruled on the current ASH petitions which were filed in early 1992 or the American Lung Association petition which was filed in June 1992. Earlier ASH petitions for an emergency temporary standard banning workplace smoking were rejected by OSHA and OSHA's actions were upheld by the United States Court of Appeals, District of Columbia Circuit.

Conversely, the AFL-CIO has filed a petition requesting that OSHA issue a workplace standard on overall indoor air quality -- a position which is in many respects consistent with the tobacco industry position. Although OSHA has yet to address this petition, the AFL/CIO petition is of more than passing significance because labor has historically had a prominent voice at OSHA.

OSHA coordinates indoor air work with the Environmental Protection Agency (EPA) at least through the vehicle of the federal interagency task force on IAQ (Committee on Indoor Air Quality-CIAQ). It is anticipated that OSHA will "receive" EPA's documents on ETS, including the finalized EPA risk assessment on ETS when and if it becomes available.

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Aggressive action in the individual states could have an impact on OSHA in the next three to five years. There are presently over 20 states that have state Occupational Safety and Health Acts. These and other states could pursue workplace rulemaking regarding indoor air or ETS, either on their own initiative or in response to petitions. For example, the American Lung Association in early June 1992 filed a petition in Oregon seeking to have a standard adopted which would ban smoking in the workplace. This petition was denied.

III. NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY & HEALTH

The National Institute of Occupational Safety and Health (NIOSH), a "sister agency" of OSHA which is located within the Department of Health and Human Services (HHS) provides data and input to OSHA. NIOSH, for example, has conducted hundreds of building investigations on indoor air quality which show that the majority of problems are related to ventilation and to ventilation systems. Less than 5% of the investigated complaints are linked to ETS. Nonetheless, within the last year NIOSH issued a Current Developments Bulletin on ETS which urges that smoking be banned in the workplace. On "other fronts" NIOSH reports that it is reviewing the concept of total indoor environmental quality (lighting, ergonomics, indoor air quality, etc.) as a possible broader focus to workplace issues than merely IAQ.

NIOSH will have direct input to OSHA in any rulemaking on IAQ or ETS and will send representatives to testify in any OSHA

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rulemaking hearings on either indoor air or ETS. Past NIOSH undertakings suggest that NIOSH will join the EPA in urging that smoking be banned in the workplace.

## IV. SUMMARY OVERVIEW REGARDING THE ENVIRONMENTAL PROTECTION AGENCY (EPA)

The EPA does not have statutory authority to regulate either indoor air quality (IAQ) or environmental tobacco smoke (ETS). However, pursuant to the Radon Gas and Indoor Air Quality Research Act, the EPA maintains that it has authority to conduct research, perform risk assessments and prepare informational documents relating to indoor air issues, including but not limited to, ETS.

As to ETS, the EPA still has under review and revision its draft risk assessment and a draft workplace smoking policy guide. It has also authorized outside consultants to prepare a draft Technical Compendium of purported scientific information on ETS. However, the EPA has not formally accepted, embraced or finalized this draft Technical Compendium and has expressed no intention to do so. In addition to the foregoing, in the near future the EPA may pursue the following types of actions:

(1) It is expected to finalize its draft risk assessment on ETS declaring ETS a Group "A" (known human) carcinogen by December 1992 or early 1993. This designation does not have direct regulatory impact but it is anticipated that a final EPA document classifying ETS as a Group A carcinogen would receive wide

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circulation in the scientific, regulatory, legislative and legal arenas, both domestically and internationally.

(2) The public statements of EPA officials indicate that the EPA intends to participate in public programs and seminars on indoor air and will provide businesses, state legislators and the general public with informational documents on indoor air prepared by the EPA. After the ETS risk assessment is finalized it is anticipated that the EPA will vigorously "market" the ETS document to such groups.

(3) As a general approach, the EPA will probably continue to urge general source control seeking to ban or eliminate pollution sources in the indoor air environment. As to ETS, the EPA will almost certainly maintain that ETS is a source of indoor air pollution that can be eliminated at no significant increase in the "cost of operation" of American business.

(4) The EPA will probably continue to obtain budget increases to conduct research on indoor air quality. The EPA can be anticipated to use these funds to "build bridges" into the indoor air community and, in so doing, spread the EPA's views on issues such as ETS.

(5) The EPA will probably become even more active in the federal Interagency Task Force on IAQ, thereby spreading the EPA's views on indoor air quality and constituents such as ETS to other agencies. Similarly, the EPA is expected to continue with its apparent effort to have EPA officials and scientists become actively

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involved in private sector organizations and professional societies. The EPA has, for example, become closely involved with the Building Owners and Managers Association (BOMA).

V. PRIVATE, QUASI-REGULATORY ORGANIZATIONS

There are several organizations which operate primarily in the private sector but which have a quasi-regulatory impact.

A. ASHRAE

In 1991 the American National Standards Institute (ANSI) approved the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 62-1989, "Ventilation for Acceptable Indoor Air Quality." ANSI's action has the effect of making ASHRAE Standard 62-1989 an American National Standard and clears the way for incorporation of the standard into state building and ventilation codes. ANSI also is the United States member of nontreaty international standards organizations such as the International Organization for Standardization (ISO). ANSI-approved standards therefore often significantly affect the development of international standards.

The ASHRAE standard prescribes the rate at which fresh or outside air must be delivered to occupied spaces and various means to condition that air. The standard recommends a ventilation rate of 20 cubic feet of fresh air per minute (cfm) per person for most commercial facilities, with 15 cfm as the minimum. The standard's drafters concluded that a minimum ventilation rate of 15 cfm/occupant will produce air quality that is acceptable to 70



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percent of visitors and to 90 percent of adapted occupants, assuming a moderate amount of smoking (30% smoking, 1.7 cigarettes/hour /smoker). For areas with more intense smoking activity (e.g., "smoking lounges"), the standard recommends a rate of 60 cfm/person.

The standard also describes acceptable concentrations of various indoor contaminants, which is an alternative to the ventilation-based approach outlined above. ETS is not on the list, but particulate concentration is included. It does not contain an independent filtration requirement. Instead, ASHRAE recommends that air filters and dust collectors be selected for the particle size and loading expected and cross-references ASHRAE Standard 52-76 or Military Equipment Specification Standard 282 for filter testing standards. The standard also recognizes the interplay of various factors in determining indoor air quality such as relative humidity and the need to ensure that air-handling units are designed for self-drainage to avoid the build-up of moisture.

In early 1992 ASHRAE formed committee SSPC 62 to review, and perhaps amend or revise, the presently existing ventilation standard 62-1989. The work of this committee may take from two to four years and will almost certainly focus upon the role of indoor smoking in the indoor environment. This is due in part to the addition of several staunch antitobacco members to SSPC 62 and the growing interest of some in ASHRAE to consider various health effects issues in addition to ASHRAE's traditional focus on engineering issues.



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B. The Environmental Safety Council -- Model Law Task Force

The IAQ Model Task Force is a recently formed effort involving a large, disparate coalition of organizations and individuals under the leadership of the Indoor Air & Water Quality Council, a permanent task force of the Environmental Safety Council of America, and in collaboration with The Council of State Governments. Its stated mission is to try to develop useful IAQ legislative language which will be anchored to scientific and technical merit, and which if widely adopted, can help avoid the implementation of conflicting and inconsistent laws in states, municipalities and other political subdivisions nationwide.

The first step in the process has been the pursuit of literature and document reviews relative to the scientific and technical considerations and relative to possible legal and statutory concerns. The resultant reports have been given to the Model Law Draft Committee which has undertaken the initial drafting. A first draft of the Model Law has been prepared and recently circulated for comment.

VI. LEGISLATIVE

A. Federal

Federal legislation in the form of an OSHA Reform Act or an Indoor Air Quality Act could address not only issues of indoor air quality, but might also address the allocation of regulatory authority between agencies such as OSHA and the EPA. However, it



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is perhaps unlikely that there will be any major federal legislation in this area until after the November elections.

B. State

A variety of states have enacted indoor air quality acts of one type or another, some of which are primarily indoor smoking ordinances. Almost half the states have Occupational Safety and Health Acts and some of those states are considering indoor air quality standards for the workplace. Some states, such as California, are beginning to look at ETS from the perspective of the State Environmental Protection Agency. California's EPA, for example, will hold a workshop on ETS on October 13-14, 1992.

In a somewhat related area almost two dozen states have enacted "privacy legislation" which prohibits employment discrimination based upon lawful off-the-job activity (such as smoking).

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ETS AND ALLEGED HEALTH EFFECTS -- A WORKPLACE PERSPECTIVE

APPENDIX

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The scientific literature reporting measurements of ETS constituents in indoor air provides little support for claims about possible chronic health effects among nonsmokers in the workplace. Moreover, the available data from published epidemiologic studies on the workplace do not provide sufficient support for the claim that ETS exposure in the workplace is associated with chronic disease in nonsmokers.

A primary deficiency in the epidemiologic studies on ETS is the lack of reliable exposure data. Published epidemiologic studies which report associations between spousal smoking and chronic disease (e.g., lung cancer, heart disease, etc.) in nonsmokers are not based on actual exposure assessments for ETS. Instead, these studies rely on subjective responses to questionnaires to assess "exposure" rather than on any quantifiable measurement. Questionnaire inquiries regarding "spousal smoking" or "living with a smoker" are used as surrogate determinants for ETS exposure in these studies. Numerous recent studies indicate, however, that such subjective assessments are an extremely unreliable and inaccurate measure of exposure. Furthermore, these questionnaire responses about exposure often vary widely when compared with actual measurements of ETS constituents in the ambient air.

Lung Cancer

The argument that ETS exposure increases the risk of lung cancer in nonsmokers is based on an interpretation of the data from epidemiologic studies of nonsmoking women married to smokers



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(spousal smoking). Of the 31 published epidemiologic studies on the issue of spousal smoking and lung cancer, none actually measured exposure to ETS. Moreover, 24 of the 31 studies report results which are not statistically significant -- that is, their conclusions were consistent with the null hypothesis of no association between reported exposure to ETS and lung cancer in nonsmokers.[1] Most important, however, is that twelve of the published

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1. Despite the inconclusive nature of the epidemiologic data on spousal smoking, several risk assessments estimating excess lung cancer mortality purportedly due to ETS have appeared recently in the published literature. Two approaches have been used. The first attempts to extrapolate risks for the general nonsmoking population based upon the risk rates reported in epidemiologic studies on spousal smoking. One such risk assessment has estimated that as many as 5,000 deaths per year can be attributed to ETS exposure among nonsmokers in the U.S. The second approach estimates a risk for nonsmokers which is based upon the reported dose of tobacco smoke for active smokers.

   Risk assessment models which are based upon dose-extrapolation from the active smoker disregard the physicochemical differences between mainstream smoke and ETS. This approach also assumes the applicability of linear extrapolation from active smoking to very low estimates of ETS exposure and dose for nonsmokers. Dose-extrapolation models which employ unrealistically high estimates of ETS exposure for nonsmokers nevertheless generate mortality projections which are at least an order of magnitude lower than estimates from the epidemiologic-based models. Dose-extrapolation models which are based upon realistic exposure levels of ETS for nonsmokers from actual constituent monitoring studies in homes, public places and the workplace have failed to predict any significant increased risk for nonsmokers.

   Both approaches have been criticized extensively in the published literature. In particular, both assessments assume a causal connection between ETS exposure and lung cancer in nonsmokers. Moreover, the risk assessment models which are based upon epidemiologic studies accept uncritically the relative risks reported in studies on spousal smoking. The

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spousal studies also assessed reported workplace exposures to ETS via questionnaire (although no actual measurements were conducted). Ten of the 12 workplace studies report associations between ETS and nonsmoker lung cancer which do not achieve statistical significance. Only two studies report marginally statistically significant increased risks for persons who reported exposure to ETS in the workplace.

Heart Disease

There are no studies in the published literature which have examined actual ETS exposures in the workplace and heart disease in nonsmokers. Only twelve epidemiologic studies on spousal smoking in the home and heart disease in nonsmokers are available. These studies, based on marriage to a smoker, are not directly relevant to the workplace issue. In addition, the spousal smoking studies on heart disease contain no data on actual exposures to ETS. Instead, exposure estimates are derived from questionnaire responses.

Nonetheless, 5 of the 12 published epidemiologic studies on spousal smoking and heart disease did attempt to address workplace exposures to ETS. None of these studies reported a statistically significant increased risk of heart disease among nonsmokers claiming exposure to ETS in the workplace. Thus, the existing literature does not provide support for the claim that ETS exposure

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approach also assumes, without foundation, that these reported risks are attributable solely to ETS.



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in the workplace is related to an increase in risk of heart disease among nonsmokers.

Respiratory Disease Other Than Cancer/Asthma

Few studies have examined the issue of exposure to ETS in the workplace and respiratory disease (other than cancer) in nonsmoking adults. The studies that have been conducted on this issue have reported contradictory results. Researchers who have reviewed these studies have cited problems with the methodology utilized and have pointed out that confounding factors (e.g., other exposures) were not considered.

Data on the possible association between ETS exposure and increased risk of an asthmatic reaction are similarly inconsistent. There are ten major studies on the possible association between exposure to ETS and acute respiratory symptoms in adult asthmatics. The studies are inconsistent in their reported results which range from reported decreases in pulmonary function of several asthmatics exposed to ETS to conclusions that ETS exposures present no apparent acute respiratory effects for asthmatics. The studies that do report an association between adult asthma and exposure to ETS suffer from several methodological flaws that include: (1) confounding factors that are not adequately controlled for in many studies; (2) inadequate sample sizes; (3) psychological factors that have not been ruled out; and, (4) reliance on unrealistic exposure conditions in enclosed smog chambers.



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Thus, the available published epidemiologic data on reported ETS exposures in the workplace and various chronic disease endpoints in nonsmokers do not support the claim that ETS poses a significant risk for chronic disease among workers. This is not to deny that some individuals may nevertheless report annoyance or irritation by the sight or smell of ETS. The building systems approach to achieving and maintaining adequate indoor air quality is designed to address those kinds of complaints.



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